

ANDERSEN AIR FORCE BASE,  
AIRCRAFT CONTROL AND WARNING RADAR TOWER  
(Building 74)  
Mount Santa Rosa  
Yigo Vicinity  
Guam

HABS No. GU-4

PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

HISTORIC AMERICAN BUILDING SURVEY  
National Park Service  
U.S. Department of the Interior  
111 Jackson Street  
Oakland, California 94607

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ANDERSEN AIR FORCE BASE,  
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(BUILDING 74)

Location: Mount Santa Rosa, Yigo Vicinity Guam

North Latitude 13.533889, West Longitude 144.911389

Significance: Building 74 was a military radar dome tower or radome tower. It is the last remaining structure of the original four building complex, QLR Unit 852 (Buildings 72, 73, 74 and 79),<sup>1</sup> located on Mt. Santa Rosa, overlooking Andersen Air Force Base (AAFB) in northern Guam. QLR Unit 852, was a stationary perimeter long range tracking facility activated by the United States Air Force (USAF), Strategic Air Command in April 1952.<sup>2</sup> Radar Tower Building 74 and 79 were designed by Thomas J. Davis and Associates of Los Angeles, California, in 1955<sup>3</sup> and constructed by Brown Pacific Maxon in 1956.<sup>4</sup> Under the call sign, "Watertown",<sup>5</sup> Unit 852 maintained a 200 mile tracking radius for tactical and logistic support for military activity during and after the Korean War.

Description: Perimeter long range radar tracking technology in the 1950's required two radome towers working in conjunction. One radome established target distance while the other tracked target bearing and height.<sup>6</sup> Building 74 was operated continuously by six to seven radar technicians.

Building 74 is circular in plan. It is a twenty two-foot high, two story concrete post and beam structure with twelve flat, evenly spaced exterior walls. The walls are set on a twenty-five foot radius matching the geometry of the dome base. The top level, called the platform, supported a rubber dome pressurized at 3.5 pounds per square inch. The dome housed the antenna drive motors and rotating radar dish.<sup>7</sup> Later dome systems used folded and/or bolted self supporting fiberglass skins without pressurization. A concrete gangway surrounded the base of the dome and included a cantilevered loading platform.

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<sup>1</sup> Building Inventory, Findings of Eligibility, "GEOBASE and Mason Report," 2004, p24-27, 119.

<sup>2</sup> Air Defense Radar Museum, <http://www.radomes.org/museum>.

<sup>3</sup> TJ Davis & Assoc, "AC&W Radar Tower, Bldg 74 & 79, As Built Drawings", Sept 12, 1955. TJ Davis currently maintains offices in the CNMI, they are listed in the title block of the "As Built" drawings

<sup>4</sup> Brown Pacific Maxon, "AC&W Radar Tower, Bldg 74 & 79, Shop Drawings", October 26, 1955. BPM was a major contractor on Guam after WWII. BPM constructed the "Back Road" to Andersen as well as the original Guam Congress Building.

<sup>5</sup> Air Defense Radar Museum, <http://www.radomes.org/museum>.

<sup>6</sup> Unpublished Interview, Randy Reeves & Ed Mendiola, interviewer, Richard Reed, FAA Offices, Guam International Airport, August 10, 2010. Both men are current FAA employees responsible for operations at the Mt Santa Rosa Facility. Mr. Reeves began working at Mt Santa Rosa in 1996, Mr. Mendiola in 1971.

<sup>7</sup> G Ekholm, email to the author, August 18, 2010, personal photos taken of the Mt Santa Rosa Facility in 1957. Photographs document typhoon Lola damage, building designation and the location and type of radar equipment.

Currently, the building does not include a dome. Double doors at ground level accessed two sets of internal hatched slab openings with a connecting winch that allowed equipment to be raised to the platform level from the interior of the building. Originally constructed with nineteen large window openings, the current tower has been enclosed with only four remaining openings in the building walls, three doors and one window.

The first floor housed banks of electronic equipment, transponders, transmitters and receivers maintaining two separate and redundant radar channels, A & B. All equipment was serviced on site by the radar technicians. The second floor, used for light administrative purposes, was accessed by an internal steel staircase with an enclosing cowl. The top platform level was accessed by ladder. The second floor included a floor to ceiling steel enclosure that could be pressurized when accessing the platform level from below.

Originally, the two radome towers forwarded information to Building 72, the military command structure located between them.<sup>8</sup> However, under Federal Aviation Administration (FAA) operation Combined Air Route Radar Approach Control (CERAP), the information was communicated via microwave link to FAA control Building 18011 at AAFB.<sup>9</sup> Building 73 housed backup power generators.

History:

As the westernmost territory of the United States, Guam has played a consistent role in military activities addressing Asia. AAFB was built up during and after the Korean War in response to its acknowledged strategic importance. QLR Unit 852 was commissioned for service in April 1952, and buildings 74 and 79 were completed as permanent structures as part of the overall Andersen expansion in 1956.

The Mt. Santa Rosa long range radar tracking facility began joint operations between the USAF and the FAA in 1970.<sup>10</sup> FAA radar technicians began full time operation of Building 74 in 1971 and maintained operation of Building 74 until it was decommissioned in 1999. In 2000, the dome was removed from Building 74 and was not replaced.

Building 74 housed Fixed Pulse Search (FPS) radar equipment. Beginning with FPS 6 series, the equipment was subsequently updated over four decades of service with the FPS 20, FPS 67 and FPS 93 series. The majority of the

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<sup>8</sup> Unpublished Interview, Randy Reeves & Ed Mendiola, interviewer, Richard Reed, FAA Offices, Guam International Airport, August 10, 2010. Both men are current FAA employees responsible for operations at the Mt Santa Rosa Facility. Mr. Reeves began working at Mt Santa Rosa in 1996, Mr. Mendiola in 1971.

<sup>9</sup> Ibid.

<sup>10</sup> Ibid.

electronic equipment in the FPS series was vacuum tube based technology manufactured by Westinghouse.<sup>11</sup> In 1996 Building 79 was demolished and replaced with a new radome tower. Building 79 currently houses Air Route Surveillance Radar 4 (ARSR-4), which is solid state electronic equipment.

Sources:

Air Defense Radar Museum, <http://www.radomes.org/museum>, (accessed 8/18/2010).

Brown Pacific Maxon, "AC&W Radar Tower, Bldg 74 & 79, Shop Drawings", October 26, 1955, 3 sheets. Accessed at AAFB 36<sup>th</sup> Civil Engineering Wing, AE Drawings Library, Building 1118, Yigo, Guam.

Building Inventory, Findings of Eligibility, "GEOBASE and Mason Report," 2004, p. 24-27, 119.

Ekholm, Gerald, A1C, USAF posted at Mt Santa Rosa, Guam. April, 1957, thru December 1958. Email to the author, August 18, 2010. Personal photos taken of the Mt Santa Rosa Facility in 1957; photographs document typhoon Lola damage: the location and type of radar equipment, the hub and strut dome structure and exterior surface sleeve attachments.

Reeves, Randy, Manager FAA Guam ZUA CERAP Support Center and Ed Mendiola FAA Radar Technician, by Author at FAA Headquarters, Guam International Airport, August 10, 2010.

TJ Davis & Assoc, "AC&W Radar Tower, Bldg 74 & 79, As Built Drawings", Sept 12, 1955, 12 sheets. Accessed at AAFB 36<sup>th</sup> Civil Engineering Wing, AE Drawings Library, Building 1118, Yigo, Guam.

Historian: This report was researched and prepared by Richard Reed AIA, NCARB, LEED AP, Guam PEALS # 266, CNMI # A106. The report was completed August 20, 2010.

Project Info: This report was prepared as mitigation for the planned demolition of Building 74 to accommodate equipment and capacity upgrades at the Mt. Santa Rosa facility, in order to modernize and improve the technical capabilities for AAFB and the FAA.